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PRODUCTION VOLUME INDEX FOR THE COMMODITIES OF LONG-TERM PRODUCTION

Implementation a new method of the production volume index for industry and construction in Ukraine, except for other problems runs into the necessity of determination of calculation method for the long-term production.

It concerns any types of industrial enterprises and all enterprises of construction. Under the long-term production the more then one

Ukrainian statistics the question stands in:

- what types of activity belong to the long-term production,
- what summarizing units of measuring to use,
- how to provide the discrete monthly data,
- how to receive an individual industrial index,
- how to aggregate the individual indexes into general brunch index,
- how to receive an index of the types of construction,
- how to aggregate the individual indexes of construction into general brunch index,
- how to form whole production volume index for industry and construction.

It is necessary to determine why a question the common volume index for industry and construction arises. According to КВЕД that is adapted version of NACE under industry the aggregation of economic activities (sections C, D, E) is understood. In combination with construction (section F) they create the group of activities that produce commodities in a counterbalance to services (not taking into account an agricultural product). So according to world practice the common production volume index settles accounts and is published.

The analysis of specialization of industrial enterprises shows us that the activities with the long-term production are:

— Heating boilers production;
— Turbines production;
— Construction and repair of ships;
— Railway and streetcar locomotives production;
— Aviation industry;

— Construction.

The time series of these industries are stable and there is the ground to use them.

In construction we take all enterprises of the section F.

For index of the long-term production it is possible to take advantage of different measurements: by agreed units (tons), money of the separate stage of the work, hours worked.

In opinion of the author measurement of volumes by the hours worked is the most acceptable as it is not always (especially in construction) possible correctly to transfer to agreed units. The task is not simple because of the necessity to unify the measurement of commodities that each has heterogeneous technology. Parallel the question of its discrete monthly account gets up. Taking into account new record-keeping standards we can not allocate the total worth into months and reflect discrete volumes correctly.

Agreed units (actual measurement) do not take into account the quality parameter while the hours worked depends on complication of product making and level of personnel qualification.

This is important as the hours worked is the closest indicator for an index of value added at constant prices that actually there must be the index of production in an ideal.

The value of the industry's contribution to GDP is directly determined by the work done by its operatives and the numbers of hours worked is a most readily available measure of this work value. It is necessary to say that in some countries such as Finland and Sweden the hours worked are used as a control indicator for a main index.

So parallel with measurement the problem of discrete account is solved as the information of hours worked is monthly given by enterprises.

However, there is the convention at application of that or other index. As a proxy for a value added index, the hours worked index is subject to the criticism.

The reason is that the time series of hours worked leave productivity out of the equation. Thus it does not reflect any improvements in working practice, the grate use of plant and capital equipment or the development of technology and use of new materials.

The same as the gross volume index hides price and structural as the worked time hides oscillation in the level of labour productivity. Clearly that it is possible to produce a different quantity of goods by the same period.

The rebasing of the index, as a rule, at five-year intervals will mitigate this defect to some extent, but will not obviate it entirely even within a five-year period.

Such series can only be used as an approximation to a series of work done if it is known that changes in labour productivity are small. Long term analyses of «value added» based on an hours worked proxy will be of doubtful validity.

Over a longer period series (index) would though need to be adjusted for changes in labor productivity.

The series have to be corrected by the estimated evolution of productivity.

That is, we can assume that increasing (falling) of labour productivity of previous year will be saved in current. We speak of average year increasing (falling), as internal year oscillation is not a model.

By other substantial factor that influencing desirably to remove, there is the calendar change. According to a technological process the production is divided on interrupting and continuous. In interrupting production (machine-building with the long-term production and construction) the number of working days depends on a calendar (weekends, new holidays, leap-year, transfers of working days, fluid religious holidays), and two years in succession can not coincide between itself. That is identical levels of row two alongside years can differ.

For the removal of this influencing it is possible to use a ratio that will characterize rejection in a working days number for the actual data row. It can be correlation of identical levels of two years.

Perhaps, it repeats a seasonal adjusting procedure, but taking into account that the hours worked index errors due to given factor can be very substantial such corrections have to be done.

In addition, the enterprises with the long term production produce, as a rule, mono commodities and their volumes are substantial for industry. So influencing of their index can be substantial for an activity type index as well.

In order to make the industrial index it is possible to use information of statistical survey of State Statistics Committee (a monthly questionnaire №1-ПЕ «Report of indicators on the types of activities») that beginning from 1999.

On our view it is to be the first stage for industrial enterprises at the lowest level type of activity but not at separate product that enables to overcome all cycle of production and simplifies adduction of separate constituents to unique measurement.

Taking into account general approach index calculation should be correlation between the hours worked in a current month and the average monthly hours worked in a base year adjusted for changes in calendar and labour productivity for the lowest type of activity:

$$i_{t/b}^{dc} = [(q_t^v : q_b^v \times 100) \times P_{t/t-1} \times k_{t/t-1}] : 100, \quad (1)$$

$P_{t/t-1}$ — coefficient annual changes in labor productivity;
$k_{t/t-1}$ — coefficient annual calendar changes;
q_t^v — number hours current monthly worked;
q_b^v — average number hours monthly worked in a base year.

We notice that the monthly data for calendar adjusting are used. For achievement of methodological unity with general chart of calculation it is important to correlate of identical points of current and previous years with the average monthly meaning of a base year.

For the large types of activity index is determined as a weighted average index number from the individual ones including of long term production activities. As conceptually the index of production must reflect the changes in the value added created by enterprises the value added of small activity is the weight.

$$I_{t/b} = \left[\sum \left(i_{t/b}^{N} \times D_b \right) + \sum \left(i_{t/b}^{dc} \times D_b \right) \right] : \sum^{N} D_b \times 100 \quad (2)$$

$I_{t/b}$ — production volume index;
N — number the types of activities aggregated in production volume index;
$i_{t/b}$ — production volume index of the activities;
D_b — value added share in a base year.

The common index ($I_{t/b}^{\text{пром}}$) on the sections (C, D, E) is formed in the same way.

The statistical survey (a monthly questionnaire №2-кб) serves as an information source of hours worked in construction industry.

Approaches of the production volume index formation in construction are similar with industry. Information of hours worked are going separately on buildings and civil engineering works. In European statistical practice unlike industry the index of construction (section F) is formed as weighted average number not from the types of activity but from:

- index of buildings;
- index of civil engineering works.

Such gradation of build works answers their grouping according to the State classification of buildings and construction that is adapted Ukrainian version of the European classification CC (Classification of constructions).

Under buildings that consist from bearing and barrier or united constructions are understood. These are the ground or underground

apartments, intended for the residence or stay of people, placing of equipment, animals, plants and objects.

Civil engineering constructions are the build systems related to earth that are created from build materials, semi finished goods, equipment as a result of implementation any construction and installation works.

As well as in industry an individual construction index (to the types of build and constructions) the lowest level of aggregation settle accounts as a correlation of monthly hours worked and the average monthly hours in a base year. As the value added for the separate type of build works is not possible to have it is expedient as a weight to use a share of build production on every type of constructions performed in a base year. As it was noticed, complete account of the output by the new record-keeping is not foreseen, so weights can be formed from the annual turnover volume as formed output. As build production are not kept in stock, a difference between a turnover and production consists, mainly, in the value of construction in progress.

The got indexes are adjusted in the changes in annual labour productivity and in the calendar distributing of working days

$$I_{t/b}^{\text{буд.}} = \left[\left(q_t^{\text{будівл.}} : q_b^{\text{будівл.}} \times Y_b^{\text{будівл.}}\right) + \left(q_t^{\text{спор}} : q_b^{\text{спор}} \times Y_b^{\text{спор}}\right)\right] \times \times P_{t/t-1} : k_{t/t-1} : 100 \qquad (3)$$

$I_{t/b}^{\text{буд}}$ production volume index;

$q_t^{\text{будівл.,спор}}$ current monthly hours worked;

$q_b^{\text{будівл., спор}}$ average monthly hours worked in a base year;

$Y_b^{\text{будівл., спор}}$ share of build output (turnover);

$k_{t/t-1}$ coefficient of calendar changes;

$P_{t/t-1}$ coefficient of labor productivity changes.

For industry and construction an index settles accounts as a weighted average number from the indexes of a particular branch. The value added shares of two industries, created in a base year, are the weights. Methodological co-ordination between industry and construction can be attained due to the use of the value added data from the unique business structural survey.

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ECONOMIC DYNAMIC'S RESEARCH AND SIMULATION ON THE BUSINESS TENDENCY SURVEYS BASIS

Annotation

Business tendency surveys (BTS) of enterprises have been recognized as the reliable source of additional information for economic tendency researches. Their attraction is a possibility of taking the subjective information about enterprises from their management stuff acting as experts. Generalized BTS information allows research of macroeconomic tendencies for the nearest future outperforming the official statistics. Mathematical models (simulators) and different synthetic indicators may be used for this purpose. Besides, BTS information may be used on a micro level for evaluating and comparing the situation in particular enterprises or among their groups.

Introduction

The history of enterprise and customer business tendency surveys (BTS) dates back over 40 years. They have been conducted on a regular monthly or quarterly basis in all European countries. The most